

COUNCIL REPORT



CITY OF MOUNTAIN VIEW

AGENDA: March 24, 2009

CATEGORY: Consent

DEPT.: Public Works

TITLE: Adopt Green Building Standard for Public Projects

RECOMMENDATION

As recommended by the Santa Clara County Cities Association, adopt a policy of LEED (Leadership in Energy and Environmental Design) Silver certification or better for all public new construction and renovation projects over 5,000 square feet.

FISCAL IMPACT

Depending on the size of the new construction or renovation project, the average cost to achieve LEED Silver certification is 0 percent to 2 percent, with costs trending downward. Numerous case studies show additional cost to achieve LEED Silver is recouped through year-after-year operations savings resulting from green building technologies.

BACKGROUND AND ANALYSIS

In 2008, the Santa Clara County Cities Association asked cities to establish LEED Silver as the standard for all new public facilities and renovations over 5,000 square feet. The City Council considered this topic in March 2008 and referred it to the Environmental Sustainability Task Force for a recommendation. In September 2008, the Task Force recommended the City adopt a standard of LEED Silver for new public buildings and renovations over 5,000 square feet, increasing to LEED Gold within five years.

The Council briefly reviewed this recommendation (as part of the Environmental Sustainability Action Plan) at a Study Session on February 24, 2009, indicating support. A Councilmember inquired about the meaning of the four LEED certification levels and why the Cities Association chose the "Silver" level.

Attached as background is the Council report from 2008 (Attachment 1) and supplemental information about LEED previously provided to the City Council (Attachment 2). All cities in the County except Mountain View have adopted LEED Silver or equivalent green building policies for public buildings.

LEED Certification Levels

There are four levels attainable under the LEED program, with each successive level requiring more points to be achieved, as follows:

- Certified: 26 to 32 points
- Silver: 33 to 38 points
- Gold: 39 to 51 points
- Platinum: 52 to 69 points

Per the attached example LEED checklist (Attachment 3), a project can earn points in six different category areas with the total points determining the level attained. Given this "menu-driven" approach, a project has maximum flexibility in how it reaches a given LEED level.

Santa Clara County Cities Association Recommendation

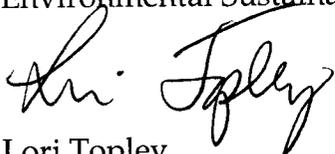
Before making its recommendation, the Cities Association polled its members to ask who had adopted or was considering adopting green building standards and what LEED level they were considering. The results indicated strong support for LEED Silver as an appropriate initial threshold because: (1) it is not overly complex (and thus not onerous for developers); (2) it involves minimal cost; and (3) it offers effective greenhouse gas reductions.

PUBLIC NOTICING—Agenda posting.

Prepared by:

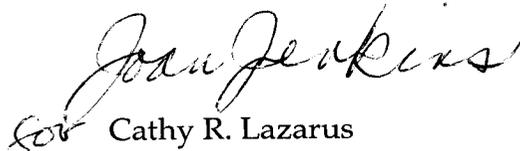


Stephen P. Attinger
Environmental Sustainability Coordinator



Lori Topley
Solid Waste Program Manager

Approved by:



Cathy R. Lazarus
Public Works Director

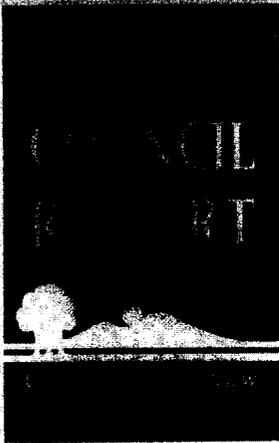


Kevin C. Duggan
City Manager

SPA-LT/7/CAM/916-03-24-09M-E-1^

- Attachments:
1. March 2008 City Council Report on Green Buildings
 2. Supplemental Information on LEED Standards
 3. Example LEED Checklist

cc: SWPM, ESC, DPWD



AGENDA: March 25, 2008

CATEGORY: Items Initiated by Council

DEPT.: City Council

TITLE: Green Building Standards

RECOMMENDATION

Approve the following actions recommended by the Santa Clara County Cities Association (SCCCA):

1. Recognize and adopt the United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) rating system and Build It Green's (BIG) GreenPoint Rated system as the official building standards for the City of Mountain View.
2. Require all development application submittals to include a completed LEED or GreenPoint Rated checklist.
3. Adopt a policy of LEED Silver certification or better for all new public construction and renovation projects over 5,000 square feet.

FISCAL IMPACT

The fiscal impact to the development community is limited to completing the LEED or GreenPoint Rated checklist. Incorporating green building practices into project design and construction remains optional.

The fiscal impact to the City from a policy of LEED Silver certification or better for all new public construction and renovation projects over 5,000 square feet is likely to be an additional cost of about 2 percent. Experience shows that the higher initial cost is recovered by savings in maintenance and operations over the building life cycle (life cycle savings of 20 percent of total construction costs have been reported). Higher levels of LEED certification (gold and platinum) add more cost than the lower certification levels (certified and silver) but also go further in reducing CO₂ emissions and other pollutants.

BACKGROUND AND ANALYSIS

A work component of the Environmental Sustainability Program adopted by the City Council in September 2007 is to investigate green building standards for possible Council action. However, in November 2007, the SCCCA approved a green building recommendation and

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requested all local jurisdictions adopt it as soon as feasible. It includes three elements as follows:

1. Recognizing and adopting LEED and GreenPoint Rated (BIG) as the official green building standards;
2. Requiring completion of the LEED or GreenPoint Rated checklist as part of the planning application; and
3. Requiring new public buildings or renovations over 5,000 square feet be LEED Silver or higher.

See Attachment 1 for the full SCCCA recommendation. The SCCCA recommendation is characterized by them as near-term and a first step to pursue immediately. The approach does not include mandatory green buildings for private developments, however, the SCCCA expects to provide more comprehensive policy recommendations in the future. The SCCCA reports the following cities have adopted the recommendations: Campbell, Cupertino, Los Altos Hills, Milpitas, Monte Sereno, Morgan Hill, Palo Alto, Santa Clara, Saratoga and Sunnyvale.

The City of San Jose has set LEED Gold for City projects and is developing private development requirements. The Home Builders Association of Northern California (HBANC) recently announced its support for mandatory sustainable green building standards in all Bay Area cities and counties and a new partnership with Build It Green.

LEED and GreenPoint Rated

The SCCCA selected the USGBC and BIG because they are recognized as leaders in the green building industry. Both organizations have developed industry standards for construction and commissioning (initializing building operations) of green buildings. Green buildings use resource-efficient techniques and materials, are durable and easy to maintain, save water and energy, are integrated into their environment and improve interior air quality and worker productivity.

The LEED standards and the GreenPoint Rated system are widely recognized and consensus-based. They have consistent and quantifiable rating criteria and provide a menu of options/choices (making possible many different routes for achieving a specific rating). They are based on independent third-party verification to ensure standard of performance.

The LEED certification standards range from certified (lowest number of points based on incorporated green elements) through silver and gold to platinum (highest). LEED standards apply to commercial and residential (mainly high density) facilities. The GreenPoint Rated

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standards apply to residential buildings and also use a point system. See Attachments 2 and 3 for building facts about a LEED project and a GreenPoint Rated project.

Costs of Green Building

Initially, because builders were not familiar with green building techniques and because green elements were added to designs at very late stages of development, costs of green building were relatively high. With increased implementation and familiarity, the cost of green building has decreased. A review of LEED costs by Davis Langdon for the State of California in "Cost of Green Revisited: Reexamining the Feasibility and Cost Impact of Sustainable Design in the Light of Increased Market Adoption" states, "There is no significant difference in average costs for green buildings as compared to non-green buildings...in many areas of the country, the contracting community has embraced sustainable design, and no longer sees sustainable design as additional burdens to be priced in their bids." The study further explains that careful selection of lower cost green elements in a project helps control costs while still achieving certification. "The most successful [projects] are those which had clear goals established from the start, and which integrated the sustainable elements into the project at an early stage. Projects that viewed the elements as added scope, tended to experience the greater budget difficulties." Langdon concludes, "A majority of the buildings we studied were able to achieve their goals for LEED certification without any additional funding."

It is important to note that the upfront investments in green building practices result in significantly lower costs for maintenance and operations over the building life cycle (life cycle savings of 20 percent of total construction costs have been reported). At the Adobe Systems LEED Platinum towers in San Jose, cost savings are \$1.2 million annually and return on investment both quick and significant.

LEED Certification Costs

To participate in LEED certification, the City would be required to join the USGBC and each new building certification process requires a separate fee. There are also costs for design and construction review, a building simulation model to ensure all systems are operating efficiently and, finally, building commissioning, the last step before occupancy. While these requirements are unique to LEED certification, the rationale behind them is sound and every building, green or not, would benefit from such a process to verify mechanical and other systems operate properly. For a \$5 million building, these costs are about \$30,000 to \$40,000.

CONCLUSION

Increasingly, both residential and commercial developers are incorporating green building practices into their projects as features that set them apart from competitors. The development community is seeking consistency and predictability in green building

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standards. The SCCCA recommendation provides those factors and facilitates implementation locally. For City facilities, the SCCCA recommendation is consistent with what City staff advises they intended to recommend. Adoption of the SCCCA recommendations will help reduce energy usage and maintenance costs City-wide and create a level playing field for future development.

PUBLIC NOTICING—Agenda posting.

Prepared by:



Ronit Bryant
Councilmember

RB/JJ/7/CAM
907-03-25-08M-E^

Attachments: 1. Santa Clara County Cities Association Recommendation
2. Adobe Systems Building Facts
3. SummerHill and Parkwood Building Facts

cc: CM, PWD, TPM, APWD—Fuller, ESC, CPE, DPWD, CDD, BO(A), EDM,
PM—Shrivastava, PP, F

Santa Clara County Cities Association (SCCCA) Recommendation

1. Recognize and Adopt Leadership in Energy and Environmental Design (LEED) and GreenPoint Rated—Local governments should formally recognize and adopt the United States Green Building Council's (USGBC) LEED rating system and Build It Green's (BIG) GreenPoint Rated system (residential) as the official green building standards for their jurisdictions.

Rationale: Adoption of the same sets of standards will create a green building program that is easier to understand and more consistent across jurisdictions. These two sets of standards have been selected because they are:

- Nationally recognized and familiar to a large and growing number of design and building professionals.
 - Consensus-based and easy to use.
 - Consist of a set of realistic yet robust standards.
 - Target quantifiable achievements based on recognized standards with clear performance benchmarks.
 - Incorporate independent, third-party verification
2. Complete Green Checklist as a Part of the Planning Application—Require completion of the LEED or GreenPoint Rated checklist as part of the planning application. This recommendation does not require the applicant to adopt green building practices, but requires a completed checklist for the project (data collection).
- Rationale:* Many policy proposals suggest a green threshold. However, in the absence of good information about current green building practices, determining threshold can be difficult. Requiring the submittal of a checklist without asking for any changes in the project is a first step that serves to:
- Educate the private sector about green building; and
 - Benchmark conventional building practices to inform policy-makers at a later date.
3. Require Public Buildings to be LEED Silver—Local governments should adopt a policy for achieving LEED Silver certification or better for all public new construction and renovation projects over 5,000 square feet.

Rationale: To ready the private sector and develop the green building industry, government should help by leading the way. Government adoption of green building practices will further spur the green building market, including the development of professional expertise, products and ultimately serve to bring down costs.

In addition to the environmental and public health benefits, green building is a financially responsible path for local governments to follow. Independent studies show green building costs are the same or slightly higher to those of standard buildings. Increased costs are often dependent upon how and when the decision to build green is built into the process.

The average premium for green buildings is slightly less than 2 percent, or \$3 to \$5 per square foot. The 2 percent increase can result in a life-cycle saving of 20 percent of total construction costs. For example, an initial upfront investment of up to \$100,000 to incorporate green building features into a \$5 million project would result in a savings of \$1 million in today's dollars over the life of the building.¹

RB/JJ/7/PWK
907-03-25-08A-E^

¹ Davis Langdon Report and State of California Report
<http://www.davislangdon.com>

ADOBE SYSTEMS

BUILDING FACTS

OWNER
ADOBE SYSTEMS INC

YEAR BUILT
WEST TOWER 1996
EAST TOWER 1998
ALMADEN 2003

ARCHITECT
HOK ARQUITECHTS

BUILDER
DEVCON

SQUARE FOOTAGE
989,000

COST SAVINGS
1.2 MILLION ANNUALLY

LEED CERTIFICATION
PLATINUM

CONSTRUCTION TYPE
RETROFIT

POLICY INFO

MOTIVATING FACTORS:
ENERGY SAVINGS
MONEY SAVINGS & REBATES

CHALLENGES:
NO "PURPLE PIPE" FOR
RECLAIMING IRRIGATION
WATER TO REACH THE
BUILDINGS



GREEN OPERATIONS

- MONITORING & OPERATING SYSTEM FOR IRRIGATION & COOLING, LIGHTING, GAS, & ENERGY USE
- LESS CHEMICALLY HAZARDOUS JANITORIAL PRODUCTS
- LESS CHEMICALLY HAZARDOUS PAINTS
- DIAGNOSTIC TOOL LOCATES PROBLEMS IN EFFICIENCY SYSTEMS
- DEMAND-REPOSE PROGRAM AVOIDS PEAKS IN POWER USAGE
- MAINTAINS TEMPERATURE, HUMIDITY, AND POWER BALANCE FOR DATA CENTERS

WATER EFFICIENCY

- WATERLESS URINALS
- DROUGHT RESISTANT LANDSCAPING
- DRIP IRRIGATION

ENERGY EFFICIENCY

- GREEN LIGHTBULBS
- NATURAL AIR CIRCULATION
- NATURAL LIGHTING

SITE ATTRIBUTES

- LOCATED ON MAJOR PUBLIC TRANSPORTATION CORRIDOR

SUMMERHILL AT PARKWOOD

BUILDING FACTS

OWNER
SUMMERHILL HOMES

YEAR BUILT
2006-PRESENT

ARCHITECT
BASSENIAN LAGONI
KTGY

BUILDER
SUMMERHILL HOMES

SQUARE FOOTAGE
1,399-2,079

SITE SIZE
13.4 GROSS ACRES

GREEN POINT RATED
80 POINTS

CONSTRUCTION TYPE
NEW CONSTRUCTION

POLICY INFO

MOTIVATING FACTORS:
COST SAVINGS AND COMFORT

RECOMMENDATIONS:
FINANCIAL INCENTIVES FOR GREEN RATED
PROJECTS RELATIVE TO CITY FEES;
STREAMLINE T-24 PROCESS;
FORMAL PUBLIC PROCESS FOR ACHIEVING
GREEN CERTIFICATION



WATER AND ENERGY EFFICIENCY

- IRRIGATION CONTROLLERS AND SPRINKLER HEADS
- DROUGHT TOLERANT LANDSCAPING
- HIGH EFFICIENCY HVAC SYSTEMS
- HIGHER LEVELS OF INSULATION

GREEN OPERATIONS

- BIO-SWALE SYSTEM: TREATS STORMWATER RUNOFF BEFORE IT IS DISCHARGED INTO CITY STORM SEWER SYSTEM

SITE ATTRIBUTES

- PRESERVED MATURE TREES
- BUILT CANTILEVERED STAIRS TO ACCOMMODATE EXISTING ROOT STRUCTURES
- LOCATED NEAR PUBLIC TRANSIT & EVERYDAY RETAIL

CONSTRUCTION MATERIALS

- ENGINEERED AND PRE-CUT LUMBER
- RECYCLED 50% OF CONSTRUCTION MATERIALS

Commercial Green Buildings: Costs and Savings

LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN (LEED) COSTS

HARD COSTS

<u>US Green Building Council (USGBC) Membership</u> (State/Local Govts):	\$500 annually
<u>Project Registration Fees:</u>	\$450
<u>Project Certification Fees</u>	
New Construction	\$1,750
Existing Buildings	\$1,250

SOFT COSTS

Incremental Construction Costs for LEED

According to the USGBC, the average cost premium to build an office or school to LEED standards ranges from 0.66% (Certified), 2.11% (Silver) to 6.5% (Platinum). Other studies suggest that incremental construction-related capital costs for LEED-certified projects typically range from 0 to 10% of the total construction cost. *In some cases LEED-certified projects can be constructed for **low or no additional construction-related cost**.* The magnitude of additional cost depends primarily on the design elements chosen and the degree to which LEED design elements are integrated to achieve cost savings. For example, raised floor design for air delivery achieves LEED credit while creating the opportunity to reduce floor to floor heights and specify smaller HVAC equipment.

The table below¹ presents a range of possible incremental capital costs of constructing a LEED-certified project vs. a non-LEED-certified project, as a percentage of total construction costs.

Note: these incremental costs assume that the project is identified as a LEED-certified project in the planning stage, that a LEED AP is assigned to the project, and that the AP, working in conjunction with the design team and key stakeholders, identifies the LEED credits that will be obtained prior to commencing any design work. The range percentage is primarily due to the variance in the total construction costs of the project, i.e. as the total construction cost increases, the percentage cost increase for LEED decreases.

Phase	Incremental Capital Cost — TYPICAL	Incremental Capital Cost — RANGE
Design ²	1.5%	1.0 – 2.0%
Energy Modeling ³	0.2%	0.05 – 0.5%
Construction	2.0%	0 – 10.0%
Commissioning	0.5%	0.1% – 1.0%
TOTAL	4.2%	1.15 – 13.5%

Key Cost Savings Considerations

Operating and maintenance (O&M) cost savings that result from a LEED project are not accounted for in the above table. **Over time these savings will offset the incremental capital design/consulting costs of LEED and the additional construction costs of LEED, if any.** Thus, in evaluating whether or not to certify a project according to LEED standards, these O&M savings must be considered.

¹ “Analyzing the Cost of Obtaining LEED Certification”, with additional input from Sean Rose, City of Mountain View Senior Civil Engineer and LEED accredited professional (AP).

² Includes LEED documentation and fees

³ Assumes mechanical and electrical systems modeling

RECENT STUDIES / ARTICLES

Going Green Receives a Boost from Home Builders: Group Pushes For Standards in Bay Area — 2008 (PDF)

<http://docs.cpuc.ca.gov/eeworkshop/CPUC-new/summit/docs/SJMercNews.pdf>
(excerpts)

Faced with one of the worst housing markets in decades, **the Bay Area home-building industry - long opposed to mandatory environmental standards - has decided to give up and go green.** In a move believed to be a first in the country, **the Home Builders Association of Northern California today will ask the region's 101 cities and nine counties to impose green building standards that would reduce energy usage by 15 percent for every home built in the Bay Area.** It's not just about the planet. With home sales sinking to historic lows, many builders have discovered that **in the environmentally conscious Bay Area, green sells.**

"This is not a fad, this is where things are going," said Joseph Perkins, president of the home builders association, which represents 100 publicly traded and private builders, including major developers such as KB Home, Pulte and Centex.

"Buyers and residents are totally embracing green. They understand the issues facing us with global warming," said Cheryl O'Connor, who as vice president for marketing of Warmington Homes pushed to make its Vantage housing development in Palo Alto one of the greenest in the region. She found that building the 76-townhome community with solar panels on every roof and a dual-flush toilet in every bathroom resulted in **twice as many sales as non-green developments.** "People are willing to pay extra for a new home that has green features as opposed to an older home that uses more energy."

And not all builders are convinced that green sells homes. "Buyers in the community at large are very interested in green products and going green," said Chris Apostolopoulos, division president for KB Home, one of the region's biggest builders. "However, they're not willing to pay for it." **Nevertheless, he's willing to support mandatory standards** if only because it promises fewer headaches by offering consistency.

Warmington's O'Connor, who also is the new chairwoman of the builders association, acknowledged that the timing of the proposal during a stagnant housing market is not the best. **Building green adds as much as \$2 a square foot, and sometimes more,** to a home's price. In the Bay Area, where the median price of a home is \$678,000 and the average size is 2,000 square feet, the added cost would be \$4,000. **Adding one or two dollars per square foot is not a whole lot.** But in a slow market where we've had to reduce prices and we're working with little or no profit margin, that's the hard part. The timing for us to embrace additional costs is difficult, **but we all know it's inevitable.**"

Quantifying Sustainability: A Study of Three Sustainable Building Rating Systems and the AIA Position Statement — 2008 (PDF)

<http://www.aia.org/SiteObjects/files/Quantifying%20Sustainability.pdf>

Energy Performance of LEED® for New Construction Buildings — 2008 (PDF)

<https://www.usgbc.org/ShowFile.aspx?DocumentID=3930>

"On average, LEED buildings are delivering anticipated savings. **Each of three views of building performance show average LEED energy use 25-30% better than the national average,** a level similar to that anticipated by LEED modeling. Average savings increase for the higher LEED levels, with Gold/Platinum buildings approaching the interim goal of Architecture 2030."

Studies Confirm Energy Savings Significant in LEED, ENERGY STAR Buildings — 2008

<http://www.usgbc.org/Docs/News/NBI%20and%20CoStar%20Group%20Release%20040108.pdf>
(excerpts)

"In the NBI study, the results indicate that new buildings certified under the U.S. Green Building Council's (USGBC) LEED certification system are, on average, **performing 25-30% better than non-LEED certified buildings in terms of energy use**. The study also demonstrates that there is a correlation between increasing levels of LEED certification and increased energy savings. Gold and Platinum LEED certified buildings have average energy savings approaching 50%.

But beyond the obvious implications of reduced energy use and reduced carbon emissions, the results from both studies strengthen the "business case" for green buildings as financially sound investments. According to the CoStar study, **LEED buildings command rent premiums of \$11.24 per square foot over their non-LEED peers and have 3.8 percent higher occupancy**.

And, in a trend that could signal greater attention from institutional investors, ENERGY STAR buildings are selling for an average of \$61 per square foot more than their peers, while **LEED buildings command a remarkable \$171 more per square foot**. The group analyzed more than 1,300 LEED Certified and ENERGY STAR buildings representing about 351 million square feet in CoStar's commercial property database of roughly 44 billion square feet, and assessed those buildings against non-green properties with similar size, location, class, tenancy and year-built characteristics to generate the results.

The NBI study was funded by USGBC with support from the U.S. Environmental Protection Agency and can be accessed at: http://www.usgbc.org/DisplayPage.aspx?CMSPageID=77#usgbc_publications

For more information on the CoStar study:

<http://www.costar.com/Partners/CoStar-Green-Study.pdf> (PDF)

<http://www.costar.com/News/Article.aspx?id=D968F1E0DCF73712B03A099E0E99C679>

The Cost of Green Revisited — Davis Langdon — 2007 (PDF)

<http://www.davislangdon.com/USA/Research/ResearchFinder/2007-The-Cost-of-Green-Revisited/>

"The 2006 study shows essentially the same results as 2004: **there is no significant difference in average costs for green buildings as compared to non-green buildings**. Many project teams are building green buildings with little or no added cost, and with budgets well within the cost range of non-green buildings with similar programs."

Greening America's Schools: Costs and Benefits — 2006 (PDF)

<http://www.usgbc.org/ShowFile.aspx?DocumentID=2908>

"**This carefully documented study conclusively demonstrates the financial, environmental, and other benefits of using green technologies in schools. In fact, failure to invest in green technologies is not financially responsible for school systems; the study uses conservative accounting practices to show that investments in green technologies significantly reduce the life-cycle cost of operating school buildings**. And the public benefits of green schools are even larger than those that work directly to the financial advantage of schools. These include reductions in water pollution, improved environmental quality, and increased productivity of learning in an improved school environment."

Mayors Adopt AIA Position on Sustainability — 2006

http://www.aia.org/aiarchitect/thisweek06/0609/0609thurs_mayors.cfm

The U.S. Conference of Mayors voted unanimously to **approve a resolution prompted by the AIA position statement that calls for the immediate energy reduction of all new and renovated buildings to half the national average for that building type**, with increased reductions of 10 percent every five years so that all buildings designed by the year 2030 will be carbon neutral—meaning that they will use no fossil fuel energy.

AIA Launches Green Building Tool Kit for Mayors — 2006

http://www.aia.org/aiarchitect/thisweek06/1110/1110n_mayors.cfm

<http://www.aia.org/toolkit2030/> (Toolkit)

The AIA and the United States Conference of Mayors (USCM) are working together to encourage city leaders to take a strong stance in favor of promoting integrated and high-performance building design with a goal of reaching a 50 percent fossil fuel reduction by 2010 and carbon neutral buildings by 2030. To that end, the AIA launched a toolkit that offers an overview of green building issues, sample ordinance language that has already been used effectively, and real-world examples of what communities are already doing to pursue green building programs.

US G.S.A. LEED Cost Study — 2004 (PDF)

<http://www.wbdg.org/ccb/GSAMAN/gsaleed.pdf>

“Overall, the study illustrates that when GSA projects take advantage of many “no cost” or “low cost” credit opportunities, the overall construction cost premium can be surprisingly limited, even at the higher rating levels. Under certain conditions, it is even possible for projects to show a slight cost decrease. However, when few low-cost credits are available to a project, the premiums increase significantly. The level of variability is most clearly illustrated in the Gold rating scenarios of the Courthouse model, which ranged from only a 1.4% premium in the “low cost” case (approximately \$3.00/GSF) to an 8.1 percent premium (almost \$18/GSF) in the “high cost” case.

GSA’s P100 requires all new construction and major modernization projects to be certified through the LEED program, with an emphasis on obtaining Silver ratings.”

Costing Green: A Comprehensive Cost Database and Budgeting Methodology — Davis Langdon — 2004 (PDF)

http://www.usgbc.org/Docs/Resources/Cost_of_Green_Full.pdf

Green Building Costs and Financial Benefits — 2003 (PDF)

Summary of Findings (per ft²)

Category 20-year Net Present Value

Energy Savings	\$5.80
Emissions Savings	\$1.20
Water Savings	\$0.50
Operations and Maintenance Savings	\$8.50
Productivity and Health Benefits	\$36.90 to \$55.30
Subtotal	\$52.90 to \$71.30
Average Extra Cost of Building Green	(-3.00 to -\$5.00)
Total 20-year Net Benefit	\$50 to \$65

Source: Capital E Analysis

ADDITIONAL INFORMATION SOURCES

Cost Analysis of LEED Credits – Palo Alto – KEMA (XLS)

Green Building - GreenPoint Rated & Local Govt Policies - Palo Alto - Aug 2007 (PPT)

LEED Green Bldg Rating System - Palo Alto - Apr 2008 (PPT)

[USGBC Economic Analysis](#)

[USGBC Case Studies](#)

[USGBC Publications](#)

[LEED Resources for Governments](#)

[Side-by-Side Comparison of LEED and New California Building Standards](#)

Types of Buildings by Certification Level

There are buildings of all types at all levels, from fire stations to schools to libraries to community centers. For an easy-to-search list of buildings by certification level, [click here](#).

Following is a sample of *city or county* LEED projects by certification level.

LEED Certified

Project Name	Owner	City	State	Country	LEED Rating
Apache Junction City Hall	City of Apache Junction	Apache Junction	AZ	US	Certified
Utoy Creek WRC Administration & Laboratory	City of Atlanta	Atlanta	GA	US	Certified
Berkeley Hills Fire Station	City of Berkeley	Berkeley	CA	US	Certified
West Englewood Public Library	City of Chicago Public Library	Chicago	IL	US	Certified
Chicago Marine Safety Station	City of Chicago, DGS	Chicago	IL	US	Certified
Cotati Police Facility	City of Cotati	Cotati	CA	US	Certified
East Grand Rapids Community Center	City of East Grand Rapids	East Grand Rapids	MI	US	Certified
Gaithersburg Youth Center	City of Gaithersburg	Gaithersburg	MD	US	Certified
City of Los Angeles Fire Station 36	City of Los Angeles	San Pedro	CA	US	Certified
Fire Station No. 89	City of Los Angeles	North Hollywood	CA	US	Certified
City of Los Angeles Fire Station 5	City of Los Angeles	Westchester	CA	US	Certified
North Adams Public Library	City of North Adams	North Adams	MA	US	Certified
Municipal Service Center	City of Olathe, Kansas	Olathe	KS	US	Certified
1328 Desert View Public Library (Broom)	City of Phoenix	Phoenix	AZ	US	Certified
City of Phoenix Fire Station 50	City of Phoenix Fire Department	Phoenix	AZ	US	Certified
RANCHO CORDOVA CITY HALL	CITY OF RANCHO CORDOVA	Rancho Cordova	CA	US	Certified
West Valley Branch Library	City of San Jose	San Jose	CA	US	Certified
High Point Community Center Addition	City of Seattle - PARKS	Seattle	WA	US	Certified
Fisher Pavilion	City of Seattle - SC	Seattle	WA	US	Certified
City of Tacoma Police/Fleet Warehouse	City of Tacoma	Tacoma	WA	US	Certified
Vancouver Conference Center & Hotel	City of Vancouver	Vancouver	WA	US	Certified
Woodland Police Station	City of Woodland	Woodland	CA	US	Certified
Clark County Public Service Center	Clark County, Washington	Vancouver	WA	US	Certified

LEED Silver

Project Name	Owner	City	State	Country	LEED Rating
City of Los Angeles Fire Station 81	Bureau of Engineering	Arleta	CA	US	Silver
Chicago Public Library, Logan Square Branch	Chicago Public Library	Chicago	IL	US	Silver
Harold C. Schott Education Center	Cincinnati Zoo and Botanical Garden	Cincinnati	OH	US	Silver
Combined Transportation Emergency & Comm	City of Austin	Austin	TX	US	Silver
North Boulder Recreation Center	City of Boulder	Boulder	CO	US	Silver
BOZEMAN PUBLIC LIBRARY	CITY OF BOZEMAN	Bozeman	MT	US	Silver
22nd District Police Station	City of Chicago	Chicago	IL	US	Silver
4th Ward Yard Building	City of Chicago, Dept. of General Service	Chicago	IL	US	Silver
Jack Evans Police Headquarters	City of Dallas	Dallas	TX	US	Silver
McCommas ECO Training Center	City of Dallas	Dallas	TX	US	Silver
New Community Center, City of Dunedin	City of Dunedin	Dunedin	FL	US	Silver
City of Fort Collins Vehicle Storage Building	City of Ft. Collins	Fort Collins	CO	US	Silver
Homer Public Library	City of Homer	Anchorage	AK	US	Silver
Issaquah Highlands Fire Station #73	City of Issaquah	Issaquah	WA	US	Silver
Morgan Hill Aquatics Center	City of Morgan Hill	Morgan Hill	CA	US	<u>Silver</u>
Port Townsend City Hall	City of Port Townsend	Port Townsend	WA	US	Silver
East End Elementary School	City of Portland, School Department	Portland	ME	US	<u>Silver</u>
Portsmouth Public Library	City of Portsmouth	Portsmouth	NH	US	Silver
Sammamish Commons	City of Sammamish	Sammamish	WA	US	Silver
Northwestern Division Police Station	CITY OF SAN DIEGO	San Diego	CA	US	Silver
Virginia Avenue Park	City of Santa Monica	Santa Monica	CA	US	<u>Silver</u>
Santa Monica Public Safety Facility	City of Santa Monica	Santa Monica	CA	US	<u>Silver</u>
Park 90/5 A	City of Seattle - FFD	Seattle	WA	US	<u>Silver</u>
<u>City of Seattle Justice Center</u>	City of Seattle - FFD	Seattle	WA	US	<u>Silver</u>
Seattle Central Library	City of Seattle - SPL	Seattle	WA	US	<u>Silver</u>
Clackamas County Public Services Building	Clackamas County	Oregon City	OR	US	<u>Silver</u>

LEED Gold

Project Name	Owner	City	State	Country	LEED Rating
Chicago Transit Authority Headquarters	Chicago Transit Authority	Chicago	IL	US	Gold
The Wellington E. Webb Building	City and County of Denver	Denver	CO	US	Gold
Austin City Hall Cafe and Store	City of Austin	Austin	TX	US	Gold
0192 Cambridge City Hall Annex	City of Cambridge	Cambridge	MA	US	Gold
HENSLEY FIELD OPERATIONS CENTER	City of Dallas	Dallas	TX	US	Gold
City of Dallas Northwest Service Center	City of Dallas Equipment & Building Serv	Dallas	TX	US	Gold
CSU Transit Center	CITY OF FORT COLLINS	Ft. Collins	CO	US	Gold
Hillsboro Civic Center	City of Hillsboro, OR	Hillsboro	OR	US	Gold
Michigan Alternative and Renewable Energy	City of Muskegon	Muskegon	MI	US	Gold
Fire Station No. 29	City of San Diego	San Diego	CA	US	Gold
GEORGE L. STEVENS SENIOR CENTER MARTIN L	CITY OF SAN DIEGO	San Diego	CA	US	Gold
Santa Clarita Transit Maintenance Facility	City of Santa Clarita	Santa Clarita	CA	US	Gold
Santa Monica Main Library	City of Santa Monica	Santa Monica	CA	US	<u>Gold</u>
Scottsdale Senior Center at Granite Reef	City of Scottsdale	Scottsdale	AZ	US	<u>Gold</u>
Park 90/5 C	City of Seattle - FFD	Seattle	WA	US	<u>Gold</u>
Seattle City Hall	City of Seattle - FFD	Seattle	WA	US	<u>Gold</u>
Carkeek Park Environmental Learning Center	City of Seattle - PARKS	Seattle	WA	US	<u>Gold</u>
Yesler Community Center	City of Seattle - PARKS	Seattle	WA	US	<u>Gold</u>

LEED Platinum

Project Name	Owner	City	State	Country	LEED Rating
Chartwell School	Chartwell School	Seaside	CA	US	Platinum
The Chicago Center for Green Technology	City of Chicago Department of the Environment	Chicago	IL	US	Platinum
Joe Serna Jr. - Cal/EPA Headquarters Bui	City of Sacramento	Sacramento	CA	US	Platinum



LEED for New Construction v2.2

San Jose Fire Station no. 35
Project # 10003495
Certification Level: SILVER
October 29, 2008

Possible Points: 69

34 Points Achieved
 Certified 26 to 32 points Silver 33 to 38 points Gold 39 to 51 points Platinum 52 or more points

8 Sustainable Sites		Possible Points: 14	
Y			
Y	Prereq 1	Construction Activity Pollution Prevention	1
Y	Credit 1	Site Selection	1
Y	Credit 2	Development Density & Community Connectivity	1
Y	Credit 3	Brownfield Redevelopment	1
Y	Credit 4.1	Alternative Transportation, Public Transportation Access	1
Y	Credit 4.2	Alternative Transportation, Bicycle Storage & Changing Rooms	1
Y	Credit 4.3	Alternative Transportation, Low-Emitting & Fuel-Efficient Vehicles	1
Y	Credit 4.4	Alternative Transportation, Parking Capacity	1
Y	Credit 5.1	Site Development, Protect or Restore Habitat	1
Y	Credit 5.2	Site Development, Maximize Open Space	1
Y	Credit 5.3	Stormwater Design, Quantity Control	1
Y	Credit 5.2	Stormwater Design, Quality Control	1
Y	Credit 7.1	Heat Island Effect, Non-Roof	1
Y	Credit 7.2	Heat Island Effect, Roof	1
Y	Credit 8	Light Pollution Reduction	1

3 Water Efficiency		Possible Points: 5	
Y			
Y	Credit 1.1	Water Efficient Landscaping, Reduce by 50%	1
Y	Credit 1.2	Water Efficient Landscaping, No Potable Use or No Irrigation	1
Y	Credit 2	Innovative Wastewater Technologies	1
Y	Credit 3.1	Water Use Reduction, 20% Reduction	1
Y	Credit 3.2	Water Use Reduction, 30% Reduction	1

2 Energy & Atmosphere		Possible Points: 7	
Y			
Y	Prereq 1	Fundamental Commissioning of the Building Energy Systems	1
Y	Prereq 2	Minimum Energy Performance	1
Y	Prereq 3	Fundamental Refrigerant Management	1
Y	Credit 1.1	Optimize Energy Performance, 10.5% New / 3.5% Existing	1
Y	Credit 1.2	Optimize Energy Performance, 14% New / 7% Existing	1
Y	Credit 1.3	Optimize Energy Performance, 17.5% New / 10.5% Existing	1
Y	Credit 1.4	Optimize Energy Performance, 21% New / 14% Existing	1
Y	Credit 1.5	Optimize Energy Performance, 24.5% New / 17.5% Existing	1
Y	Credit 1.6	Optimize Energy Performance, 28% New / 21% Existing	1
Y	Credit 1.7	Optimize Energy Performance, 31.5% New / 24.5% Existing	1
Y	Credit 1.8	Optimize Energy Performance, 35% New / 28% Existing	1
Y	Credit 1.9	Optimize Energy Performance, 38.5% New / 31.5% Existing	1
Y	Credit 1.10	Optimize Energy Performance, 42% New / 35% Existing	1
Y	Credit 2.1	Renewable Energy, 2.5%	1
Y	Credit 2.2	Renewable Energy, 7.5%	1
Y	Credit 2.3	Renewable Energy, 12.5%	1
Y	Credit 3	Enhanced Commissioning	1
Y	Credit 4	Enhanced Refrigerant Management	1
Y	Credit 5	Measurement & Verification	1
Y	Credit 6	Green Power	1

7 Materials & Resources		Possible Points: 8	
Y			
Y	Prereq 1	Storage & Collection of Recyclables	1
Y	Credit 1.1	Building Reuse, Maintain 75% of Existing Walls, Floors, & Roof	1
Y	Credit 1.2	Building Reuse, Maintain 95% of Existing Walls, Floors, & Roof	1
Y	Credit 1.3	Building Reuse, Maintain 50% of Interior Non-Structural Elements	1
Y	Credit 2.1	Construction Waste Management, Divert 50% from Disposal	1
Y	Credit 2.2	Construction Waste Management, Divert 75% from Disposal	1
Y	Credit 3.1	Materials Reuse, 5%	1
Y	Credit 3.2	Materials Reuse, 10%	1
Y	Credit 4.1	Recycled Content, 10%	1
Y	Credit 4.2	Recycled Content, 20%	1
Y	Credit 5.1	Regional Materials, 10%	1
Y	Credit 5.2	Regional Materials, 20%	1
Y	Credit 5	Rapidly Renewable Materials	1
Y	Credit 7	Certified Wood	1

11 Indoor Environmental Quality		Possible Points: 15	
Y			
Y	Prereq 1	Minimum IAQ Performance	1
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control	1
Y	Credit 1	Outdoor Air Delivery Monitoring	1
Y	Credit 2	Increase Ventilation	1
Y	Credit 3.1	Construction IAQ Management Plan, During Construction	1
Y	Credit 3.2	Construction IAQ Management Plan, Before Occupancy	1
Y	Credit 4.1	Low-Emitting Materials, Adhesives & Sealants	1
Y	Credit 4.2	Low-Emitting Materials, Paints & Coatings	1
Y	Credit 4.3	Low-Emitting Materials, Carpet Systems	1
Y	Credit 4.4	Low-Emitting Materials, Composite Wood & Agrifiber Products	1
Y	Credit 5	Indoor Chemical & Pollutant Source Control	1
Y	Credit 6.1	Controllability of Systems, Lighting	1
Y	Credit 6.2	Controllability of Systems, Thermal Comfort	1
Y	Credit 7.1	Thermal Comfort, Design	1
Y	Credit 7.2	Thermal Comfort, Verification	1
Y	Credit 8.1	Daylight & Views, Daylight 75% of Spaces	1
Y	Credit 8.2	Daylight & Views, Views for 90% of Spaces	1

3 Innovation & Design Process		Possible Points: 5	
Y			
Y	Credit 1.1	Innovation in Design: WEC3 44% reduction	1
Y	Credit 1.2	Innovation in Design:	1
Y	Credit 1.3	Innovation in Design:	1
Y	Credit 1.4	Innovation in Design:	1
Y	Credit 2	LEED® Accredited Professional	1